in multi-dose containers, with an added preservative. The compositions may take such forms as suspensions, solutions, or emulsions in oily or aqueous vehicles, and may contain formulatory agents such as suspending, stabilizing and/or dispersing agents. Alternatively, the active ingredient can be in powder form for constitution with a suitable vehicle, for example, sterile pyrogen-free water, before use.

The compounds can also be formulated in rectal compositions such as suppositories or retention enemas, for example, containing conventional suppository bases such as cocoa butter or other glycerides.

In addition to the formulations described previously, the compounds may also be formulated as a depot preparation. Such long acting formulations may be administered by implantation (*e.g.*, subcutaneously or intramuscularly) or by intramuscular injection. Thus, for example, the compounds may be formulated with suitable polymeric or hydrophobic materials (*e.g.*, as an emulsion in an acceptable oil) or ion exchange resins, or as sparingly soluble derivatives, for example, as a sparingly soluble salt.

The compositions can, if desired, be presented in a pack or dispenser device which may contain one or more unit dosage forms containing the active ingredient. The pack can, for example, comprise metal or plastic foil, such as a blister pack. The pack or dispenser device can be accompanied by instructions for administration.

The therapeutic compositions of the invention can also contain a carrier or excipient, many of which are known to persons of ordinary skill in the art. Excipients that can be used include buffers (*e.g.*, citrate buffer, phosphate buffer, acetate buffer, and bicarbonate buffer), amino acids, urea, alcohols, ascorbic acid, phospholipids,

proteins (*e.g.*, serum albumin), EDTA, sodium chloride, liposomes, mannitol, sorbitol, and glycerol.

The nucleic acids, polypeptides, antibodies, or other modulatory compounds of the invention (*i.e.*, compounds that alter the expression of GLUTX or the activity of GLUTX) can be administered by any standard route of administration. For example, administration can be parenteral, intravenous, subcutaneous, intramuscular, intracranial, intraorbital, opthalmic, intraventricular, intracapsular, intraspinal, intracisternal, intraperitoneal, transmucosal, or oral. The modulatory compound can be formulated in various ways, according to the corresponding route of administration. For example, liquid solutions can be made for ingestion or injection; gels or powders can be made for ingestion, inhalation, or topical application. Methods for making such formulations are well known and can be found in, for example, "Remington's Pharmaceutical Sciences." It is expected that the preferred route of administration will be intravenous.

XIX. Example

The human GLUTX gene was identified as follows. A variety of public and proprietary sequence databases were searched using an approach designed to identify putative glucose transporters. This search led to the identification of an EST which was thought likely to encode a portion of a gene having some similarity to genes encoding previously identified glucose transporters. Two PCR primers (TGTTTCCTAGTCTTTGCTACA; SEQ ID NO:8 and TTGTTAAGGCCTTCCATT; SEQ ID NO:9) based on the sequence of the identified EST were used to screen a human mixed tissue cDNA library. This screening resulted in the identification of a probe which

was used to screen the human mixed tissue cDNA library. This screening led to the identification of a number of putative glucose transporter clones. A number of these clones were sequenced and ordered to arrive at a complete sequence for GLUTX. The nucleotide sequence of GLUTX is shown in Fig. 1. The predicted amino acid sequence of GLUTX is also shown in Fig. 2.

GLUTX is predicted to have 12 transmembrane domains. The first transmembrane domain extends from about amino acid 52 (intracellular end) to about amino acid 71 (extracellular end). The second transmembrane domain extends from about amino acid 108 (extracellular end) to about amino acid 128 (intracellular end). The third transmembrane domain extends from about amino acid 141 (intracellular end) to about amino acid 159 (extracellular end). The fourth transmembrane domain extends from about amino acid 166 (extracellular end) to about amino acid 189 (intracellular end). The fifth transmembrane domain extends from about amino acid 204 (intracellular end) to about amino acid 221 (extracellular end). The sixth transmembrane domain extends from about amino acid 233 (extracellular end) to about amino acid 252 (intracellular end). The seventh transmembrane domain extends from about amino acid 317 (intracellular end) to about amino acid 333 (extracellular end). The eighth transmembrane domain extends from about amino acid 355 (extracellular end) to about amino acid 375 (intracellular end). The ninth transmembrane domain extends from about amino acid 383 (intracellular end) to about amino acid 404 (extracellular end). The tenth transmembrane domain extends from about amino acid 413 (extracellular end) to about amino acid 437 (intracellular end). The eleventh transmembrane domain extends from about amino acid 449 (intracellular end) to about amino acid 472 (extracellular